Complete Summary

GUIDELINE TITLE

Practice parameters for the use of light therapy in the treatment of sleep disorders.

BIBLIOGRAPHIC SOURCE(S)

American Academy of Sleep Medicine. Practice parameters for the use of light therapy in the treatment of sleep disorders. Sleep 1999 Aug 1;22(5):641-60. [49 references] PubMed

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Sleeping disorders:

- delayed sleep phase syndrome
- advanced sleep phase syndrome
- non-24-hour sleep-wake syndrome
- jet lag
- shift work
- age-related sleep disturbances

GUIDELINE CATEGORY

Treatment

CLINICAL SPECIALTY

Neurology
Sleep Medicine

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To provide recommendations for the practice of sleep medicine in North America regarding the use of light therapy for treatment of various sleep disorders.

TARGET POPULATION

Individuals in North America with sleeping disorders

INTERVENTIONS AND PRACTICES CONSIDERED

Light therapy

MAJOR OUTCOMES CONSIDERED

Not stated

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developers began with a series of review papers which lacked the emphasis on evidence based methodology. An updated search was conducted based on the following key words: light therapy, sleep disorders, delayed sleep phase syndrome, advanced sleep phase syndrome, non-24-hour–sleep phase syndrome, jet lag, shift work, healthy elderly, dementia, demented, aging, elderly, circadian rhythm disorders, practice guidelines and practice parameters in the Medline (U.S. National Library of Medicine) database from January 1994 to December 1997.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus
Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Recommendation Grades

A (Evidence Level I)

- Randomized well-designed trials with low-alpha & low-beta errors*

B (Evidence Level II)

- Randomized trials with high-beta errors*

C (Evidence Level III)

- Nonrandomized controlled or concurrent cohort studies

C (Evidence Level IV)

- Nonrandomized historical cohort studies

C (Evidence Level V)

- Case series

* Alpha error refers to the probability (generally set at 95% or greater) that a significant result (e.g., $p<0.05$) is the correct conclusion of the study or studies. Beta error refers to the probability (generally set at 80% or 90% or greater) that a nonsignificant result (e.g., $p>0.05$) is the correct conclusion of the study or studies. The estimation of beta error is generally the result of a power analysis. The power analysis includes a sample size analysis which projects the size of the study population necessary to ensure that significant differences will be observed if actually present.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

When scientific data were insufficient or inconclusive, recommendations were based on consensus opinion.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Levels of Recommendation

Standard

- This is a generally accepted patient-care strategy which reflects a high degree of clinical certainty. The term standard generally implies the use of Level I Evidence, which directly addresses the clinical issue, or overwhelming Level II Evidence.

Guideline

- This is a patient-care strategy which reflects a moderate degree of clinical certainty. The term guideline implies the use of Level II Evidence or a consensus of Level III Evidence.

Option

- This is a patient-care strategy which reflects uncertain clinical use. The term option implies either inconclusive or conflicting evidence or conflicting expert opinion.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The Board of Directors of the American Academy of Sleep Medicine approved these recommendations.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Supported by Level II (randomized trials with high beta errors), Level III (non randomized controlled or concurrent cohort studies), level IV (non-randomized historical cohort studies) and/or Level V (case series) evidence, the following practice parameters are Grade B and/or C recommendations. Recommendation grades (A-C) and recommendation levels (standards, guidelines, or option) are defined at the end of the Major Recommendations field.

Safety and Side Effects

a. A prescribing physician should be aware of dosage recommendations, potential side effects and recommended light intensity limits if light therapy is to be used (Dijk et al., 1995) (Standard).
b. Light therapy appears to be a generally safe treatment option for some circadian rhythm disorders when used within reported guideline for light intensity and time limits (Boulos et al., 1995; Eastman et al., 1995; Terman et al., 1995) (Guideline).

General Recommendations

Treatment is indicated only if there is a desire on the patient's part to resolve symptoms. The objective is to achieve a sleep onset at either a more socially acceptable time or at a time that provides sufficient sleep in keeping with the work schedule or lifestyle. Specific recommendations based on specific disorders are given under each condition.

1. Alternative Strategies

Proper sleep hygiene is recommended as an adjunct to any light therapy. Some advanced sleep phase syndrome or delayed sleep phase syndrome patients may have an extrinsic type of the syndrome where external influences such as work hours or social obligations are driving the advanced or delayed sleep onset. In such cases, modification of the external influence may treat the syndrome. New data on these alternatives as well as data on pharmacotherapy approaches are evolving in the literature but analysis of those data were not within the scope of the guideline project.

2. Follow-up

Many patients may have initial success but relapse due to failure to maintain the treatment progress. Use of counseling and other means of ensuring adherence to treatment has not been examined (Boulos et al., 1995; Campbell et al., 1995 Report I; Campbell et al., 1995 Report III; Campbell et al., 1995 Report V; Dijk et al., 1995; Eastman et al., 1995; Terman et al., 1995). Objective documentation is generally limited to a shift in the core body temperature minimum, a shift in the onset of dim light melatonin secretion or in the peak of the melatonin rhythm, information the patient has recorded in diaries, or actigraphic measurement of rest/activity patterns. Subjective documentation is also used by asking patients if they have responded.

3. Light Therapy Dose Levels

Tables 3 through 6 (see the original guideline document) present light therapy dose levels. This is a rapidly evolving area of investigation and these dosage recommendations may change.

Recommendations For Specific Disorders

1. Delayed Sleep Phase Syndrome (DSPS)

a. Light therapy appears to have potential utility based on current study data, in the treatment of delayed sleep phase syndrome (Terman et al., 1995) (Guideline).
b. The minimum or optimal duration of light therapy for delayed sleep phase syndrome is unknown (Option).

Supported By Level II And Level III Evidence; Recommendation Grade B-C 2.

2. Advanced Sleep Phase Syndrome (ASPS)
    a. Light therapy appears to have potential utility based on current study data, in the treatment of advanced sleep phase syndrome (Terman et al., 1995) (Guideline).
    b. The minimum or optimal duration of light therapy for delayed sleep phase syndrome is unknown (Option).

    Supported By Level II And Level III Evidence; Recommendation Grade B-C 3.

3. Non-24-Hour Sleep-Wake Syndrome
    a. Light therapy may be of benefit in treating some blind patients with non-24-hour sleep-wake syndrome (Terman et al., 1995) (Option).
    b. The minimum or optimal duration of light therapy for non-24-hour sleep-wake syndrome is unknown (Option).

    Supported By Level III Evidence; Recommendation Grade C

4. Jet Lag
    a. While the evidence is minimal and sometimes conflicting, bright light exposure at destination in order to enhance circadian re-entrainment would appear safe and potentially beneficial for travelers across multiple time zones (Boulos et al., 1995) (Option).

    Supported By Conflicting Level II to Level V Evidence; Recommendation Grade C

5. Shift Work
    a. Bright light prior to the core body temperature minimum may be helpful in shifting workers from a day to evening to night rotating work schedule (Eastman et al., 1995) (Option).
    b. Bright light after the core body temperature minimum may be helpful in shifting workers from a night to evening to day schedule (Eastman et al., 1995) (Option).

    Supported by Level II To Level IV Evidence; Recommendation Grade C

6. Seasonal Affective Disorder
    a. Bright light therapy for depression in seasonal affective disorder may improve the hypersomnia. Conversely, the presence of hypersomnia may predict a response of the depression of seasonal affective disorder to light therapy (Terman et al., 1995). However, as the disorder is

primarily a mood disorder and not commonly primarily managed by the sleep disorder specialist, it will not be further analyzed.

Age-Related Disturbances

1. Healthy Elderly
    a. See recommendation for "Advanced Sleep Phase Syndrome."
    b. Adequate studies are not available to provide specific recommendations on light therapy to treat other causes of insomnia in this group.
2. Dementia
    a. No specific recommendation is made about the clinical use of light therapy in dementia patients.

Definitions:

Recommendation Grades

A (Evidence Level I)

- Randomized well-designed trials with low-alpha & low-beta errors*

B (Evidence Level II)

- Randomized trials with high-beta errors*

C (Evidence Level III)

- Nonrandomized controlled or concurrent cohort studies

C (Evidence Level IV)

- Nonrandomized historical cohort studies

C (Evidence Level V)

- Case series

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Levels of Recommendation

Standard

- This is a generally accepted patient-care strategy which reflects a high degree of clinical certainty. The term standard generally implies the use of Level I Evidence, which directly addresses the clinical issue, or overwhelming Level II Evidence.

Guideline

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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

In most cases, the conclusions are based on evidence from controlled studies that were published in peer-reviewed journals. When scientific data are insufficient or inconclusive, this is pointed out and the recommendations are based on consensus opinion. The type of evidence supporting each recommendation is identified in the "Major Recommendations" field.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Improve sleep quality and quality of life

POTENTIAL HARMS

Based on one study, light intensity of 10,000 lux for 1250 hours over 5 years produced no major side effects. Minor side effects such as eye irritation were controlled by dose reduction.

Other side effects reported include irritability, headache, nausea, increased sensation of glare, erythema reactions usually from ultraviolet light (which can be

prevented with a humidifier). Rarely, light therapy may provoke a hypomanic state in patients with bipolar affective disorders.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These practice parameters define principles of practice that should meet the needs of most patients in most clinical situations. These guidelines should not, however, be considered inclusive of all proper methods of care or exclusive of other methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the propriety of any specific care must be made by the practitioner in light of the individual circumstances presented by the patient and the available diagnostic and treatment options and resources.
- Recommendations in this paper are based on the studies identified but the reader is encouraged to check the most current literature since this data is changing rapidly as more as more studies become available.
- The guideline developer identified three articles in press that were not available in the published literature at the time of completion of the guidelines and that provide further positive evidence on benefits of light therapy in seasonal affective disorder. The reader is urged to seek these and any new additional articles in this active area of research at the time of therapy consideration especially for additional information on light exposure intensities and experimental protocols.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999

GUIDELINE DEVELOPER(S)

American Academy of Sleep Medicine - Professional Association

SOURCE(S) OF FUNDING

American Academy of Sleep Medicine

GUIDELINE COMMITTEE

Standards of Practice Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Names of Committee Members: Andrew L. Chesson, Jr; Michael Littner; David Davila; W. MacDowell Anderson; Madeleine Grigg-Damberger; Kristyna Hartse; Stephen Johnson; Merrill Wise.

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the American Academy of Sleep Medicine´s Standards of Practice Committee and Board of Directors completed detailed conflict-of-interest statements and were found to have no conflicts of interest with regard to this subject.

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Print copies: Available from the Standards of Practice Committee, American Academy of Sleep Medicine, One Westbrook Corporate Center, Suite 920, Westchester, IL 60154. Web site: www.aasmnet.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

NGC STATUS

This summary was completed by ECRI on December 19, 2000. The information was verified by the guideline developer on January 15, 2001.

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